L111
.A3P18
v. 17

LIBRARY OF PRINCETON
JUL 20 1931
THEOLOGICAL SEMINARY

Pamphlet No. 17

May, 1931

UNITED STATES
DEPARTMENT OF THE INTERIOR

RAY LYMAN WILBUR, SECRETARY

U. S. OFFICE OF EDUCATION

WILLIAM JOHN COOPER, COMMISSIONER

WASHINGTON, D. C.

# INDUSTRIAL EDUCATION SECTION OF THE SURVEY OF THE BUFFALO PUBLIC SCHOOLS

By MARIS M. PROFFITT

*Senior Specialist in Industrial Education, Office of Education*

---

CONTENTS.—Introduction—History of the development of the vocational program—The industrial arts program—Industrial work in special schools—The continuation school—Shop and other courses in the vocational high schools—Size of classes in shop courses in vocational high schools—Enrollments, salaries, and pupil cost in the vocational high schools—Trades taught, school staff, enrollment and teacher load in day vocational high schools—Miscellaneous data—Some details on evening school enrollments—A general statement of conclusions—Some specific recommendations.

---

## Introduction

The value of any educational program is determined by the contribution which it makes to the educational needs of the people for whom it is maintained; its efficiency by the degree to which the program is successfully and economically carried out. For the purposes of this survey report the industrial education program of the Buffalo (N. Y.) public schools has been considered from the viewpoint of the following questions:

1. Is the program of studies designed to realize objectives corresponding to the needs of those for whom the educational system exists?
2. Is the character of instruction such as will best meet the objectives of the training program?
3. Is the duration of the training program in accordance with the needs to be served?

47347°—31——1

4. Is the cost of training in keeping with the services needed for providing educational facilities for which the local school system has responsibility?

Buffalo is an industrial city with many and diversified industries. The predominance of manufacturing industries is apparent to all. The industries already established, the natural advantages which the city possesses as an industrial center, the encouragement given industrial enterprises by the business men of the city, all indicate for the future a comparatively rapid industrial growth and the employment of an even larger percentage of its people in trade and industrial lines of work. The responsibility for assisting in meeting the need of the city for trained trade and technical workers can not be neglected by the public schools without dire consequences to industry. A comparison of the numbers who go into industrial and professional lines of work would make this responsibility loom large.

Modern industrial conditions are increasing the demand for trained workers. At no time in history has the displacement of men by machinery, especially men working in low-skilled or semiskilled jobs, been in such large proportions, never were machines so complex with regard to the operations that can be performed on them, and never was trade-related technical knowledge so necessary to such a large number of workers. Moreover, many plants operating according to modern industrial methods, with the force organized wholly for production purposes, find it difficult to provide training either for breaking in inexperienced men or for upgrading their men already on the job. Where such situations obtain it is next to impossible for a man without previous experience to find employment in the particular trade represented which will provide opportunities for training that will enable him to become a master tradesman.

A program of studies for a city school system which fails to include, beyond the elementary grades, a balanced amount of training in trade and industrial subjects, thus in reality excluding from further educational advantages a large number of pupils, is undemocratic both in theory and practice. For various reasons a large percentage of pupils will not take advantage of the 4-year general high-school program. Some for economic or other reasons can not possibly do so, others for lack of interest in such a program or because of interest in other lines will not choose to do so, and for still others such a program is highly inadvisable.

The fact that a good industrial program may cost more money per pupil per year of training than does the general high-school program should be no deterrent to those responsible for providing educational advantages beyond the elementary school. In the first place, it is as much a public responsibility to provide suitable training for those who can not take advantage of a 4-year high-school general course as

it is to provide for those who can. In the second place, the cost of training per pupil for those taking industrial courses may be much less than for those taking the general high-school course. When consideration is given to the length of time that it takes a pupil to complete a general or college preparatory course and also to the fact that when graduated he may have an additional four or more years of instruction in college at public expense, this seems quite apparent. In the third place, the quick returns to society in the form of material products and earnings, by those who early complete a trade course and go to work, or by those who are employed at the time of training, amply justify the cost to the public which industrial training entails.

Various plans of administrative and instructional organization and various types of schools and classes exist for providing vocational training. The present plans in many cities are the result of gradual development, modification, and growth, and may not compare favorably with an ideal plan that could be worked out in the light of present situations and conditions. Some school systems have emphasized the part-time plan of education and have all or most of their training program on that basis; some have provided little if any training except of the all-day trade preparatory type and the trade extension evening type; some have organized vocational courses in the regular high school, others in comprehensive and technical high schools, others in a separate trade school offering a variety of trade courses, others in separate trade schools offering a variety of trade courses, and still others in separate trade schools with one or only a few trades included in its program of instruction. As a general rule the more programs of training placed under one administrative and supervisory head and housed in the same building under the immediate control of one principal the less will be the cost for overhead administration. There are certain efficiency factors, however, that must be taken into consideration if an effective program is to be carried on. The determination of the budget for vocational work, the plan of organization, the courses to be included in the training program and the standards for instruction, equipment, and teacher qualifications, must all be under the control of individuals who are qualified by training and experience for such responsibilities.

Experience indicates that courses organized in accordance with the true vocational objective can not be expected to succeed: (1) Unless the immediate control and supervision of work are in the hands of qualified specialists in this phase of education; (2) unless the environmental conditions, such as the attitude of the instructional staff and student body of the schools in which the courses are offered are friendly toward and sympathetic with the vocational work; (3) unless opportunities are provided for building up necessary cooperative relations with industry for the purpose of obtaining its assistance in the organization of the instructional program and the placement of students

in employment; (4) unless there is a reasonable degree of freedom from some of the general academic regulations obtaining in most general high schools relative to scheduling of classes, uniform regulation of teachers' activities and time, and demands made upon both teachers and students in connection with extracurricular and special activities carried on by the school. Vocational education is a special form of education and can not easily be fitted into the mold of a general education program.

As indicated above, practice varies greatly as to the organization of vocational training. Frequently undesirable situations existing as a result of past practice can not be readily changed. For example, an expensive building, however badly located, can not be moved 3 miles away to a different part of the city. Neither can there be effected a combination of present vocational schools which had their origin in the laudable efforts of individuals to free the industrial classes of the control of principals and others who possessed little knowledge of the requirements necessary for providing instruction in accordance with the true vocational objective.

Buffalo very early started a movement for vocational industrial education. The effort has been persistent and continuous and in comparison with many cities, highly successful. No account or evaluation of the present organization and program for vocational education would be either complete or fair without taking into consideration the historical background and evolution of the present system. Two main struggles are apparent in this development in Buffalo and are characteristic in general of the problems encountered by other cities which started vocational programs a score or more years ago. The present vocational programs of cities which did pioneer work under competent leaders in vocational education and which passed successfully through the trials of a formative and testing period lasting many years may not be ideal but with respect to the true vocational objective they generally represent the best type of practice as regards the plan of organization, courses offered, and quality of instruction. The Buffalo system of vocational education belongs to this class.

## History of the Development of the Vocational Program

In September, 1909, in accordance with permissive legislation passed by the State of New York in 1908, Buffalo established its first vocational school in two rooms of school No. 5, one of which was used as a classroom, the other as a shop. The standard for admission was the completion of the sixth grade and the attainment of the fourteenth birthday. The schools in the immediate neighborhood were canvassed for backward pupils who were recommended by their principals for this new type of training, on the general theory that they would make more progress there than in the regular schools.

The school day was divided equally between shop and classroom work. The shop work resembled regular manual training activities, but the teacher was a good craftsman in woodwork. The classroom instructor, who acted as head of the school, was a college graduate possessing the usual training required of elementary school principals at that time.

Seventeen pupils reported the first morning, practically all of whom were retarded in the regular school work for two or more years. The school had practically no bona fide vocational characteristics. In reality it began as a special school for abnormally slow and incompetent boys. None of them voluntarily sought admission to the school as a means of preparing for a trade. Nevertheless, this school became known as the Seneca Vocational School. Some years of experience were necessary for discovering that the purpose of the legislation was not carried out in this new institution except in its name. It did serve, however, as a means for relieving the neighborhood, which gladly sent its retarded pupils to it so long as that class of students was acceptable.

During the first year of the existence of this school, plans were made for the establishment of three more similar schools or departments, located in three widely separated sections of the city. The first one of these was the Black Rock Vocational School, located in a hardware store and tinshop bought for this purpose and assumed to be annexed to school No. 20. This school varied only slightly in its set-up from the Seneca school. The shop activities were wood turning, pattern making, and molding. The character of the student body was identical with that of Seneca.

The other two schools or departments were located in elementary schools Nos. 58 and 44. The enrollments in these two schools consisted largely of students of Polish parentage. Both schools were greatly handicapped in doing standard elementary school work owing to the persistence of the Polish language and customs in the home and the community. For these and other reasons these schools had a disproportionate amount of retardation. It was for the relief of this situation that the principals of these two schools sought the establishment of the new type of school within their own institutions. Each of these schools had a sufficiently large group of retarded pupils to fill to capacity the provisions made at that time for the beginnings of what are now known as the Peckham and Burgard Vocational High Schools.

In order that pupils with less than a sixth-grade education might be admitted at school No. 58, the special regulations of the State board of regents for the establishment and conduct of vocational schools were not complied with and the city did not ask special aid for this school under the vocational law. The school admitted both

girls and boys offering woodwork to the latter and cooking and sewing to the former. There was no conscious vocational purpose behind the school at this period of its history. At school No. 44 the principal and his assistant became interested in including printing as a subject of instruction and jointly purchased a press and issued a school paper. This interest in printing grew and later the work was organized at public expense. In September, 1910, four vocational departments or schools were in operation. They grew in popularity with the elementary schools which they were relieving of troublesome problems, and their enrollments increased.

Inability on the part of the city to participate in special State quotas for vocational education through failure to organize the vocational work as separate schools led to an artificial separateness. The teacher of bookwork in each of these vocational departments or schools became the head of the vocational "school" and attempted to deal directly with the central office and the State director of vocational education. At first the principals of the elementary schools in which this independent growth began to take form were rather complacent toward the developing separateness, but soon discovered that the idea of separate vocational schools was very zealously advocated by the State department of education.

The pioneer vocational people found themselves between two alternatives—one the capitulation to the organization in which their schools had begun to develop with the consequent necessity of accepting the leadership and direction of principals who had little knowledge of and less interest in pure vocational education, the other of remaining in an embattled position against their hosts, and with a growing determination for the development of real vocational education in spite of the unfavorable conditions existing in organization and administration. They chose the latter course and lived under the resulting intolerable conditions until the public demand for a vocational school of greater size and possibilities of service developed among the Polish-American citizens. This resulted in securing the establishment of an actually separate vocational school through the purchase by the city of a temporary building in the form of a vacated grocery warehouse. This was the beginning of the present Peckham Vocational High School and took the place of everything of a vocational nature connected with the department at school No. 58.

The Seneca School developed a high degree of independence in its own original quarters. Its vocational program grew at a rate that enabled it to fill the empty rooms in school No. 5 as rapidly as they were vacated by the regular elementary school, which was occasioned by the decline in the residential character of the district. The vocational school of printing was moved into the old Technical High School building when that school was moved to its new quarters in

1912. The old Black Rock Elementary School began to drop off in enrollment and the man in charge of the vocational department was made principal of the whole school. Thus did the four vocational schools secure physical independence and freedom for experimentation and development of industrial training which would function in the preparation of youth for advantageous entrance upon employment in trade and industrial pursuits.

The character of many of the students admitted to these schools constituted, however, another great obstacle to the development of good vocational work. In Buffalo, as in many other cities at that time, vocational schools were generally regarded by the principals of other schools as suitable places to send the failures, misfits, and the pupils with low mentality. To overcome this influence and to secure the enrollment of boys who had made more normal progress in their school work required a long period of continuous effort. This situation was largely due to the general misconception of the requirements for industrial training and the proper function of vocational education. The vocational educators built up intimate association with the personnel of industry, both as individuals and as organizations of employees and of laborers. These associations were of great value in assisting in the organization of plans, sound from the point of the industrial needs of the city, for recruiting, training, and placing boys in industrial work.

Public sentiment in favor of vocational industrial education grew, enrollments increased, and the quality of the students improved. Years passed, and the minimum standard of admission was made equal to that required by the high schools. By 1918 the enrollment justified starting plans for a building program, and within a period of a dozen years from that date, four appropriately constructed and equipped buildings were provided for housing the vocational industrial work.

In September, 1930, there were enrolled in the four vocational schools 2,364 day students preparing for advanced apprenticeship in 33 vocations and 2,484 apprentices and journeymen securing vocational extension education in the evening classes. The vocational schools have recently been transformed, in accordance with State regulations and standards, into 4-year vocational high schools under the direction of a deputy superintendent of schools in charge of vocational education. The appointment of a vocational man as deputy superintendent of schools was an advisable arrangement for the promotion of vocational industrial education in Buffalo. It has furnished a channel for the exchange of ideas and the development and growth of proper articulation between the educational system and the industries of the city that has resulted in bringing about an intelligent understanding and appreciation of the need for an adequate and

efficient program of industrial training and of the necessity for cooperation in order that it may be realized. By means of such favorable situations the school system is enabled to furnish a kind of specific educational advantage, helpful to that great proportion of its population which is to become the man power in its industries.

## The Industrial Arts Program

The importance of the industrial arts as a phase of general education is recognized and provided for in a fairly liberal way in the programs of the elementary schools, a few of which include the ninth grade. Industrial-arts work is made available as an elective to ninth-grade boys in most of the high schools by sending them to grade buildings for instruction. The general plan for the work, the organization of the courses, the equipment needed to provided facilities for all pupils, and the cost of a full program could be more effectively and economically administered in a system of junior high schools.

In the school year 1929–30 industrial arts was offered in every elementary school in all grades beginning with 5A. The time allotment was as follows:

| Grade: | Time allotment |
|---|---|
| 5A (a few 5B) | 1⅓, 45-minute periods per week for 40 weeks. |
| 6 | 1⅓ to 4, 45-minute periods per week for 40 weeks. |
| 7 | 4 to 5, 45-minute periods per week for 40 weeks. |
| 8 | 4 to 5, 45 minute periods per week for 40 weeks. |
| 9 | 4 to 10, 45-minute periods per week for 40 weeks. |

For the year 1930–31 the time allotment for 5A and 6B classes is reduced to one 45-minute period per week in all schools except those where there is a large foreign element. The reduction of the time for 6B classes to only one 45-minute period per week is unfortunate, as the resulting economy is not in proportion to the effect which it will have on the results of the work. It is difficult to organize an effective program for sixth-grade boys on the basis of only one 45-minute shop period per week.

The amount and character of the shop work offered in the elementary schools vary greatly. An advisable effort is made to make shop work correspond to the needs of the community in which a school is located, especially wherever these constitute a special problem.

In addition there are special schools for those children who do not fit into the regular program of instruction and who it is reasonably certain will not qualify for admission to high school. In such special schools for the older boys industrial work is offered on a third to a half time basis. When it is considered that the vocational schools are advisedly requiring the same standards for admission as are the regular high schools, these special types of schools are a necessity for meeting the responsibility which the public schools have for providing

types of educational advantages in accordance with the needs of different classes of pupils. The general plan of the Buffalo schools for meeting special needs for industrial courses through the organization of special schools and classes is comparatively quite comprehensive and well arranged. It deserves to receive the encouragement of all interested parties.

For the program of the industrial arts, 102 shops were maintained in 1929–30, which represents a reduction of 8 from the previous year. The teachers regularly employed numbered 99 as against 102 for the year 1928–29. The different shop activities included and the number of teachers by schools for the past two years are shown in the following tables:

TABLE 1.—*Statistical summary of shops and teachers*

| | 1928–29 | 1929–30 |
|---|---|---|
| Total number of regularly employed teachers | 102 | 99 |
| Total number of shops under supervision of the department of industrial arts | 110 | 102 |

TABLE 2.—*Distribution of different types of shopwork*

| Shopwork | Shops | | Teachers | |
|---|---|---|---|---|
| | 1928–29 | 1929–30 | 1928–29 | 1929–30 |
| Grammar grades: | | | | |
| Woodwork | 73 | 65 | 65 | 62 |
| Metal work | 12 | 11 | 12 | 11 |
| Printing | 3 | 2 | 3 | 2 |
| Composite | 6 | 6 | 6 | 6 |
| Shoe repair | 1 | 1 | 1 | 1 |
| Development and industrial centers, Opportunity School, and special centers: | | | | |
| Woodwork | 8 | 7 | 8 | 7 |
| Metal work | 5 | 6 | 5 | 6 |
| Home mechanics | 1 | 1 | 1 | 1 |
| Printing | 1 | 1 | 1 | 1 |
| Shoe repair and leather | 2 | 2 | 2 | 2 |
| High schools: Printing | 1 | 1 | 1 | 1 |

TABLE 3.—*Distribution of pupils by schools and grades*

| Schools and grades | 1929–30 |
|---|---|
| High schools: | |
| Lafayette (school No. 45) | 65 |
| Fosdick-Masten Park (school No. 48) | 179 |
| Hutchinson (school No. 76) | 154 |
| Technical High School | 384 |
| South Park High School | 74 |
| Total | 856 |
| Grammar schools: | |
| Fifth and sixth grades | 4,932 |
| Seventh grade | 3,143 |
| Eighth grade | 2,675 |
| Ninth grade | |
| Opportunity School | 232 |
| Industrial and development classes, special and ungraded classes | 846 |
| Total | 11,828 |
| Total number from all schools | 12,684 |

In general, the types of activities included in the industrial arts are suitable and adequate for the grades in which they are offered. The quality of instruction is apparently good. The projects included in the shop activities are very well selected from the standpoint of the interest and ability levels of the pupils.

A commendable interest has been developed among the pupils in industrial arts in organizing afterschool clubs for construction work in some particular activity of special interest to the group of boys. A majority of these during the past year have been model airplane clubs. These clubs are sponsored and directed by the teachers as a voluntary piece of afterschool work. Sometimes as many boys are seen doing shop work after schools hours as are enrolled in the regular class.

According to information furnished for 1929–30, the average size of shop classes in the industrial arts, excluding special schools but including all special and ungraded classes, was 16.6 pupils, with a range of from 12 to 25. An effort should be made to reduce the limits of the range and to bring the classes up to an enrollment of approximately 20 pupils. A class average of 16.6 pupils makes the cost of instruction too high. An enrollment of 20 is consistent with good instruction.

## Industrial Work in Special Schools

Industrial handwork of some kind is made a special feature of the programs for special schools and classes for the mentally slow and retarded generally. It is good practice to segregate such pupils and to include in their program of activities types of industrial work, educational in its nature, and valuable for the experiences it furnishes. One-third or more of the time of these pupils is usually given to shop work. At Industrial School No. 10 one-third of the school day is spent in shop work, including such activities as woodwork, leather, sheet metal, household mechanics, and weaving. The average chronological age of the 189 boys enrolled in this school is 14.1; the average mental age is 9.3. The projects included in the different shop activities are selected with special reference to the accomplishment abilities of the pupils. This is an important factor and makes it possible to secure the boys' interests in the work with the result that some practical pieces of work are accomplished in a very creditable manner.

Included in the half-dozen special schools devoting a large percentage of the time of their programs to types of industrial work is the Opportunity School. This school is doing quite an interesting piece of work, and a valuable one to society, in giving an additional and final chance for the nonconformist and overage boy to accomplish something that will be an inspiration to him and will build up his morale before his final separation from the public schools.

The student body is a heterogeneous group, including a few negroes, but the Polish students predominate. Many of the boys have not come up through the regular public schools. The average chronological age of the 200 boys composing the enrollment in this school is 15.11 with a wide range. The average mental age is 9.8, with a range of from 6.5 to 12.5. The daily program is divided equally between general classroom work and shop activities. The shop work includes machine-shop practice, sheet metal, woodwork, broom making, cobbling, and chair caning. The shop instruction is good. The teachers are apparently qualified for dealing with the particular type of boy sent to this school, are skilled in mechanics, and interested in the boys.

The shop work is of a practical character and much of it of a trade nature. Broom making is given strictly as trade training. The product of this shop is of a commercial standard and is sold on the market. The machine shop has some standard equipment for trade work.

The teaching staff consists of five women who teach the academic bookwork, and seven men who teach shop subjects. The staff takes an interest in upgrading the boys. Assistance is given in directing their athletic activities, discipline is maintained, and some aid is extended in helping boys to find jobs. The principal, who has had considerable experience in dealing with truants and other irregular students, has in operation a plan for saving a small amount of money to the boy's credit, accruing from profits realized from the sale of school products which the boy makes. The plan is apparently working well and is quite an incentive to the boys to be industrious and to do good work.

This school is poorly housed, needs some better equipment, and improved conditions that will tone up the whole physical environment, all of which will facilitate the realization of the aim of the program.

## The Continuation School

The continuation school was organized 10 years ago and since that time approximately 30,000 young people who severed their connection with the regular day school and entered upon employment have been enrolled to continue their education upon a part-time basis. The school yearly registers approximately three times as many pupils as the largest high school. For the year 1929–30 the total registration was 7,654, of which 4,178 were girls and 3,476 were boys. The fact that more girls than boys of continuation-school age quit the regular school and go to work with consequent enrollment in the continuation school raises the question as to why this situation exists. While no positive evidence was collected bearing upon this point, it is suggested that the variety of courses provided for girls in the all-day school would suffer by comparison with those provided for boys.

TABLE 1.—*Data on enrollment, attendance, etc., in the Central Continuation School for the year 1929–30*

| | Boys' school | Girls' school | Total |
|---|---|---|---|
| Total registration | 3,476 | 4,178 | 7,654 |
| Highest weekly registration | 2,408 | 3,118 | 5,526 |
| Average percentage of attendance | 91.2 | 90.4 | 90.8 |
| Number of visitors | 251 | 412 | 663 |
| Number of graduates | 273 | 346 | 619 |
| Number of courses | 34 | 24 | 58 |
| Number placed in employment | 1,569 | 1,131 | 2,700 |
| Home visits by teachers | 3,247 | 4,162 | 7,409 |

Of the 7,451 pupils who had enrolled at the end of the thirty-fourth week when this school was visited 321, or 4.3 per cent, were 14 years of age; 3,363, or 45.2 per cent, were 15 years of age; 33, or 0.4 per cent, were 17 years of age or over.

Under the New York State law all boys and girls up to the age of 18 who have not been graduated from high school must attend continuation school, one day a week for 4 hours, for a period of 40 weeks. Attendance may be either from 8 a. m. to 12 noon, or from 1 to 5 p. m. Pupils temporarily out of employment are required to attend 20 hours per week.

During the school year 1929–30, the Otis Intelligence Group Test was given to the pupils in the continuation school. According to the results obtained more than half of the pupils are "normal" or above, and about one-fourth are classified as "slow normal." The range in I. Q's. for the boys is from 44 to 115 with 86.1 as an average. Of the girls, 53 per cent rate "normal" and above, and 7 per cent are "superior," 22 per cent are "slow normal."

Classes in the girls' school include groups in sewing, cooking, home making, typewriting, shorthand, office practice, office-machine operation, department-store training, retail selling, high-school subjects, elementary school subjects, millinery, hair dressing, and arts and crafts. More than 40 per cent are enrolled in the sewing group and about 25 per cent in the typewriting group. The shorthand group includes 34 pupils, 80 per cent of whom as indicated by mental ratings of pupils according to the courses in which they are enrolled, are classed as "normal," and as "superior." Consideration is given to the chances of the pupils for success when enrolling them for a definite line of instruction.

The courses listed for boys include bookkeeping, chemistry, office practice, drafting, printing composition, commercial art, electricity, auto mechanics, elementary subjects, printing presswork, machine-shop practice, woodworking, and plumbing. The subjects included for both girls and boys are rather comprehensive, in accordance with the varied needs of the group. Where the size of the instructional staff and school facilities permit, as many specific courses of instruc-

tion should be provided as the number of pupils who can profit by that specific type of instruction will warrant.

One important function connected with the work of the continuation school is the placement in employment of the boys and girls whom it enrolls.

The following tables furnish some information as to this task and indicate that under present employment conditions a very good record is made in keeping the continuation pupils employed in acceptable positions. The data are taken from the report of the placement office of the Boys' Continuation School for the year 1929–30.

TABLE 5.—*Number of placements, types of employment and wages of pupils enrolled in the Boys' Continuation School for the year ending June, 1930*

| Type of employment | Number of placements | | | | | | | | | | | Wages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | Total | |
| Trade apprentices | 40 | 52 | 44 | 19 | 22 | 10 | 29 | 41 | 38 | 25 | 320 | $10–$25 |
| Machine operators | 8 | 22 | 5 | 2 | ------ | 3 | 2 | ------ | ------ | 2 | 44 | 12– 15 |
| Assembly work | 2 | 4 | ------ | ------ | 1 | 1 | ------ | 2 | 5 | ------ | 15 | 10– 12 |
| Stock keepers | 3 | 7 | 1 | ------ | 3 | 1 | ------ | ------ | 1 | 4 | 20 | 10 |
| Checkers | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 1 | ------ | ------ | 1 | 14 |
| Wagon helpers | 1 | 6 | 16 | 39 | 1 | 8 | 13 | ------ | 6 | 8 | 98 | 8– 9 |
| Bundle wrappers | 3 | ------ | ------ | ------ | 1 | ------ | ------ | 3 | ------ | 4 | 11 | 8– 9 |
| Salesmen | ------ | 9 | 3 | ------ | 7 | 2 | ------ | 33 | 1 | ------ | 55 | 12– 15 |
| Stock | 10 | 23 | 10 | 9 | 5 | 3 | 9 | 15 | 9 | 2 | 95 | 8– 10 |
| Shipping clerks | 2 | 2 | 3 | 1 | ------ | ------ | ------ | 2 | 4 | 2 | 16 | 12– 15 |
| Clerks | 3 | 3 | 2 | ------ | 1 | 1 | 6 | 1 | 6 | ------ | 23 | 10– 15 |
| Office aides | 6 | 14 | 6 | 2 | 4 | 8 | 2 | 5 | 5 | 7 | 59 | 9– 12.50 |
| Office boy | 6 | 2 | 1 | ------ | 1 | 3 | 2 | 2 | 4 | 6 | 27 | 8– 12 |
| Draftsman | ------ | ------ | 1 | ------ | 3 | 1 | 1 | 2 | 2 | ------ | 10 | 12– 20 |
| Errand boys | 61 | 39 | 51 | 24 | 47 | 32 | 43 | 52 | 70 | 54 | 473 | 7– 12 |
| Hotel workers | ------ | 7 | ------ | 1 | 1 | 1 | 4 | 13 | 5 | 1 | 33 | 12– 15 |
| Miscellaneous work | 12 | 11 | 3 | ------ | 8 | 1 | 4 | 10 | 9 | 10 | 68 | 7– 12 |
| Part-time jobs | 5 | ------ | ------ | 200 | ------ | ------ | 3 | 44 | 16 | ------ | 268 | ---------- |
| Total | 162 | 201 | 146 | 297 | 105 | 75 | 118 | 226 | 181 | 125 | [1]1,636 | ---------- |

[1] 262 boys received more than 1 position.

In addition to the 1,636 placements shown in above table, there were 209 placements made from the boys enrolled in the 20-hour unemployed group in the continuation school.

TABLE 6.—*Number of pupils and average wage by age, enrolled in the Boys' Continuation School for the year ending June, 1930*

| Age | Number of placements | | | | | | | | | | | Wage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | Total | |
| Under 16 | 67 | 60 | 38 | 19 | 23 | 27 | 23 | 37 | 33 | 25 | 349 | $8. |
| Over 16 | 48 | 101 | 80 | 61 | 48 | 34 | 52 | 56 | 63 | 48 | 591 | $10.50. |
| Over 17 | 41 | 41 | 28 | 39 | 34 | 14 | 39 | 45 | 53 | 32 | 366 | $12 and up. |
| Total | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 1,306 | |

TABLE 7.—*Distribution of 1,306 pupils by school grade completed, enrolled in the Boys' Continuation School for the year ending June, 1930*

| Amount of education completed | Number of pupils | Amount of education completed | Number of pupils |
|---|---|---|---|
| Under seventh grade | 189 | Third year high school | 62 |
| Over seventh grade | 294 | Graduate of high school | 18 |
| Eighth grade graduate | 351 | Vocational school training | 66 |
| First year high school | 210 | | |
| Second year high school | 116 | Total | 1,306 |

The State law which requires that minors temporarily unemployed must attend continuation school 20 hours per week has created more of a problem in the case of boys than of girls, as girls may be legally employed by their mothers. Two hundred boys coming under this provision were placed during the year; girls were seldom "temporarily unemployed."

To meet the demand of the comparatively large number of girls who drop out of the full-time school, a full-time vocational service training has been inaugurated for girls. The enrollment in these courses totaled 127 during the past year, which represented a large increase over the previous year. Whether such full-time courses should be provided in the continuation school or in some regular full-time school depends upon the policies controlling the development of all-day schools and courses. The situation in the continuation school points out a specific need that should receive attention. If the need is to be met by the continuation school better facilities should be provided for carrying on the work.

In general, the facilities for instruction in the continuation school should be improved. Better library service should be provided; study rooms should be made available, and more materials and equipment for instruction should be added. The girls' school has a library of only about 200 volumes. The school has been unable to obtain a branch library service from the public library.

At the present time the boys' school is housed in inadequate quarters. The building which was used for this purpose was destroyed by fire in November, 1929. Some of the classes are maintained under wholly unsuitable conditions in an old building condemned and abandoned as a grade school sometime in the past. The rest of the classes are maintained in a few vacant rooms in a public elementary school. The work of the boys' vocational school is seriously handicapped by such conditions. The need for a modern building for the continuation-school classes is imminent.

The employment certificating bureau is maintained in an office in the downtown area. The bureau of child hygiene, which examines pupils in order to qualify for health certificates under the control of the department of health, is located in another building. These

activities, together with that of the continuation school, should be conveniently located so that their work can be coordinated.

The four agencies which have to do with the induction of the child into employment are the bureau of child hygiene, the employment bureau, the placement service of the New York State Employment Bureau, and the continuation school. Any arrangements whereby the mutual relations of these different agencies can be served would facilitate the work of all.

## Shop and Other Courses in the Vocational High Schools

The shop courses offered in the Buffalo vocational high schools correspond very favorably to the needs of the industries of the city for trained workers. There is, however, unnecessary duplication of machine-shop courses in the different schools. One school should give this subject as a unit-trade course. Whatever instruction is given in this subject in any other school should be only as related work to some unit trade, as, for example, machine-shop practice as a part of the automobile trade work. Statistics under this title are given in the following tables:

TABLE 8.—*Shop subjects offered in vocational high schools in 1929–30*

| Schools | Machine-shop practice | Plastering | Pattern making | Sheet metal | Carpentry | Bricklaying | Plumbing | Millwork and joinery | Electrical wiring | Electrical construction | Radiotelephony | Radio broadcasting | Armature winding | Manual telephony | Tool and die making | Storage-battery construction | Storage-battery repair | Steam electric generators | Photography | Cabinetmaking | Upholstering | Tailoring | Painting and finishing | Baking | Printing, press work | Printing, hand composition | Linotype composition | Automobile machine shop | Automobile mechanical repair | Automobile electrical repair | Automobile chassis repair | Automobile ignition | Tire vulcanizing and repair | Airplane construction and repair | Aircraft engine repair | Lithography |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Burgard Vocational High School | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| McKinley Vocational High School | × | | | | × | | | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peckham Vocational High School | × | | | | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seneca Vocational High School | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

TABLE 9.—*Trade-related subjects offered in vocational high schools in 1929–30*

| Schools | Trade drafting | | | | Trade science | | | | Trade mathematics | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | General | Electrical drawing | Steam-engineering drafting | Plumbing drafting | Upholstering drawing | Machine-shop drawing | Plastering drawing | Bricklaying drawing | Carpentry drafting | Sheet-metal drafting | Pattern-making drafting | Millwork drafting | Aviation drafting | Automobile drafting | Printing art | General | Electrical science | Steam-engineering science | Machine-shop science | Bakers science | Upholstering science | Woodworking science | Plumbing science | Pattern making science | Sheet-metal science | Automobile science | Printing chemistry | General | Electrical mathematics | Machine-shop mathematics | Carpentry and millwork | Baker mathematics | Upholstering mathematics | Plastering mathematics | Plumbing mathematics | Bricklaying mathematics | Aviation mathematics | Printing mathematics |
| Burgard Vocational High School | X | X | X | | | X | | | | | | | | | X | X | X | X | X | | | | | | | | X | X | X | X | X | | | | | | | |
| McKinley Vocational High School | X | | | X | X | | X | X | X | X | X | X | X | X | | X | | | | X | X | X | X | X | X | X | X | | | | | X | X | X | X | X | X |
| Peckham Vocational High School | X | | | X | X | | X | X | X | X | X | X | X | X | | X | | | | X | X | X | X | X | X | X | X | | | | | X | X | X | X | X | X |
| Seneca Vocational High School | X | | | X | X | | X | X | X | X | X | X | X | X | | X | | | | X | X | X | X | X | X | X | X | | | | | X | X | X | X | X | X |

TABLE 10.—*Social science subjects offered in vocational high schools in 1929–30*

| School | English | American history | Industrial economics | Industrial history | Civics | Art appreciation | Physiology | Music | Industrial geography |
|---|---|---|---|---|---|---|---|---|---|
| Burgard Vocational High School | X | X | X | X | X | X | X | X | X |
| McKinley Vocational High School | XX | XX | XX | XX | X | ---- | ---- | X | XX |
| Peckham Vocational High School | XX | X | XX | XX | ---- | ---- | ---- | ---- | X |
| Seneca Vocational High School | X | ---- | X | X | X | ---- | ---- | X | ---- |

The subjects included in the academic work are standard according to general practice.

## Size of Classes in Shop Courses in Vocational High Schools

Statistics under this title are given in the following tables:

TABLE 11.—*Burgard Vocational High School—Size of classes in different shop courses, October, 1930*

| Shop course | Number of classes having the enrollments indicated | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 to 9 students | 10 to 11 students | 12 to 13 students | 14 to 15 students | 16 to 17 students | 18 to 19 students | 20 to 21 students | 22 to 23 students | 24 to 25 students | 26 to 27 students | 28 to 29 students |
| Automobile shop practice | ---- | ---- | ---- | 1 | ---- | 1 | 1 | 2 | ---- | ---- | ---- |
| Automobile engine repair | ---- | ---- | ---- | ---- | 1 | 1 | 1 | ---- | 1 | ---- | ---- |
| Automobile mechanical repair | ---- | ---- | ---- | ---- | 1 | 1 | ---- | ---- | ---- | ---- | ---- |
| Automobile electrical repair | ---- | ---- | ---- | 2 | ---- | ---- | ---- | ---- | 1 | ---- | 1 |
| Automobile ignition | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 2 | ---- |
| Airplane construction and repair | ---- | 1 | ---- | ---- | ---- | ---- | 1 | ---- | ---- | ---- | ---- |
| Aircraft machine-shop repair | ---- | ---- | ---- | ---- | ---- | 1 | 3 | ---- | ---- | ---- | ---- |
| Tire repairing | ---- | ---- | 1 | ---- | ---- | ---- | ---- | ---- | ---- | 1 | ---- |
| Storage-battery repair | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 2 | ---- | ---- | ---- |
| Linotype composition | 1 | ---- | 1 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Printing, hand composition | ---- | ---- | ---- | ---- | 1 | ---- | ---- | 1 | ---- | ---- | ---- |
| Printing, presswork | ---- | 2 | ---- | ---- | ---- | 1 | 1 | ---- | ---- | ---- | ---- |
| Lithography | ---- | ---- | ---- | ---- | 1 | ---- | ---- | ---- | 1 | ---- | ---- |
| Total | 1 | 3 | 2 | 3 | 3 | 5 | 7 | 5 | 3 | 3 | 1 |

TABLE 12.—*McKinley Vocational High School—Size of classes in different shop courses, October, 1930*

| Shop course | Number of classes having the enrollments indicated | | | | | |
|---|---|---|---|---|---|---|
| | 12 to 13 students | 14 to 15 students | 16 to 17 students | 18 to 19 students | 20 to 21 students | 22 to 23 students |
| Machine-shop practice | ---- | 1 | 4 | 3 | ---- | ---- |
| Patternmaking | ---- | ---- | 1 | ---- | ---- | 1 |
| Sheet-metal practice | ---- | ---- | 1 | ---- | ---- | 1 |
| Plastering | 1 | 1 | ---- | ---- | ---- | ---- |
| Carpentry | ---- | ---- | 1 | ---- | 1 | ---- |
| Bricklaying | ---- | 1 | ---- | ---- | ---- | 1 |
| Plumbing | ---- | ---- | 1 | ---- | 1 | ---- |
| Millwork and joinery | ---- | ---- | 1 | ---- | ---- | ---- |
| Total | 1 | 3 | 9 | 3 | 2 | 3 |

TABLE 13.—*Peckham Vocational High School—Size of classes in different shop courses in 1930–31*

| Shop courses | Number of classes having the enrollments indicated | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 9 to 10 students | 10 to 11 students | 12 to 13 students | 14 to 15 students | 16 to 17 students | 18 to 19 students | 20 to 21 students | 22 to 23 students | 24 to 25 students |
| Machine-shop practice | 1 | | | 2 | 2 | 3 | 4 | | |
| Mill work | | | | | | 1 | 1 | | |
| Woodworking | | | | | | 1 | | 4 | 1 |
| Upholstering | | | | | | | 1 | 1 | |
| Tailoring | | 1 | | | 1 | | | | |
| Painting and finishing | | | 1 | | | 1 | | | |
| Baking | | | | | 1 | 1 | | | |
| Total | 1 | 1 | 1 | 2 | 4 | 7 | 6 | 5 | 1 |

TABLE 14.—*Seneca Vocational High School—Size of classes in different shop courses, October, 1930*

| Shop course | Number of classes having enrollments indicated | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 10 to 11 students | 12 to 13 students | 14 to 15 students | 16 to 17 students | 18 to 19 students | 20 to 21 students | 22 to 23 students | 24 to 25 students | 26 to 27 students | 28 to 29 students |
| Machine-shop practice | | | 2 | | 2 | | | 1 | 1 | |
| Armature winding | | | | | | | | | 2 | |
| Electrical wiring | | | | | | 1 | 1 | 2 | 2 | |
| Manual and automatic telephony | | | | | | 1 | 2 | | 1 | |
| Alternating and direct current laboratory | | | | 1 | 1 | 1 | 2 | 1 | | |
| Storage-battery construction | | | | | | | 1 | | 1 | |
| Steam-electric generation | 1 | 1 | | | | | | | | |
| Radio | 2 | 2 | 1 | | | | 2 | | | |
| Photography | | 1 | | | 1 | | | | | 1 |
| Total | 3 | 4 | 3 | 1 | 4 | 3 | 8 | 4 | 7 | 1 |

There are too many small classes in the vocational high schools. This is an important factor in the cost of instruction. It can be safely assumed that enrollments of approximately 20 in shop classes and approximately 25 in related subjects and social science subjects are not inconsistent, under favorable conditions, with good instruction and reasonable standards of economy in administration. In shop classes it is more difficult than in academic classes to maintain standard enrollments. Frequently it is desirable from the standpoint of industry to organize classes in which the enrollments will necessarily be limited because of the highly specialized character of the instruction—corresponding to occupational specialization, or to the introduction of new industries, such as aviation. However, the situation should be dealt with as an exception and not as a general practice.

The problem of small classes is not by any means confined to shop work in the vocational schools. The expansion of the program of studies into a 4-year curriculum has resulted in rather a large number of small classes in the two upper years of school. In general, the organization of new and additional classes should be conditioned by the possibility of enrolling a sufficient number of students to meet standard practices in economy.

On the other hand, there are some classes which are too large. Some classes are combinations of groups from different school years. There follow some examples illustrative of the present situation.

One second-year class in industrial economics has an enrollment of only 16 pupils; an American history class composed of third and fourth year students has an enrollment of 53; another industrial history class composed of first-year students enrolls 14; in another school an instructor has a class in machine-shop practice consisting of 10 first-year students, 5 second-year students, and 4 third-year students. A class in electrical trade mathematics for the second-year students has an enrollments of 37; a fourth-year class for trade mathematics numbers 10; a United States history class of fourth-year students numbers 9; a number of English classes run from 12 to 20. A music instructor devotes a large part of his day to classes composed of from 1 to 4 students. Well-planned combinations of groups of students in the different school years with a double period devoted to supervised study and recitation would at least help to solve the problem in the upper school years.

## Enrollments, Salaries, and Pupil Cost in the Vocational High Schools

In the main the following seven statistical tables need no comment.

Seneca has made the largest percentage gain in enrollment and is now filled to capacity. In fact, a large number of students were denied admission at the opening of the school year in 1930. In general, the percentages of increase indicate that in the near future the vocational high schools will have an enrollment throughout the 4-year course which will justify their plan of organization.

The annual salaries shown are sufficiently high to attract good teachers, but are not excessive.

TABLE 15.—*Increase in enrollments of vocational high schools from 1925–26 to 1929–30, with percentage of gain*

| School | 1925–26 | 1926–27 | 1927–28 | 1928–29 | 1929–30 | 1930–31 | Percentage gain, 1925–1931 |
|---|---|---|---|---|---|---|---|
| Burgard Vocational | 476 | 445 | 443 | 448 | 668 | 726 | 52. 55 |
| McKinley Vocational | 217 | 253 | 282 | 298 | 341 | 378 | 74. 1 |
| Peckham Vocational | 395 | 434 | 334 | 304 | 375 | 501 | 26. 8 |
| Seneca Vocational | 333 | 457 | 541 | 508 | 672 | 831 | 149. 5 |
| Total | 1, 421 | 1, 489 | 1, 600 | 1, 558 | 2, 056 | 2, 436 | 71. 4 |

TABLE 16.—*Enrollment of students by school years in vocational high schools, October, 1930*

| School | School year | | | | |
|---|---|---|---|---|---|
| | First year | Second year | Third year | Fourth year | Total |
| Burgard Vocational | 378 | 246 | 71 | 31 | 726 |
| McKinley Vocational | 199 | 156 | 51 | 8 | 414 |
| Peckham Vocational | 313 | 141 | 53 | 10 | 517 |
| Seneca Vocational | 368 | 198 | 111 | 96 | 773 |
| Total | 1,258 | 741 | 286 | 145 | 2,430 |
| Percentage | 51.7 | 30.5 | 11.8 | 6.0 | 100.00 |

82 per cent of the 2,430 pupils enrolled in the 4-year vocational high schools in October, 1930, were in the first 2 school years. This is one indication for the need of providing trade-training courses of less than 4 years' duration.

TABLE 17.—*Enrollment by ages, September, 1930*

| School | 13 years | 14 years | 15 years | 16 years | 17 years | 18 years | Over 18 years | Total |
|---|---|---|---|---|---|---|---|---|
| Burgard | 28 | 115 | 230 | 201 | 88 | 46 | 18 | 726 |
| McKinley | 11 | 49 | 143 | 125 | 32 | 12 | 6 | 378 |
| Peckham | 14 | 93 | 184 | 142 | 34 | 10 | 5 | 499 |
| Seneca | 22 | [1] 15 | [1] 4 | | | | | |
| | | 121 | 217 | 184 | 126 | 54 | 36 | 760 |
| Total | 75 | 393 | 778 | 652 | 280 | 122 | 64 | 2,363 |

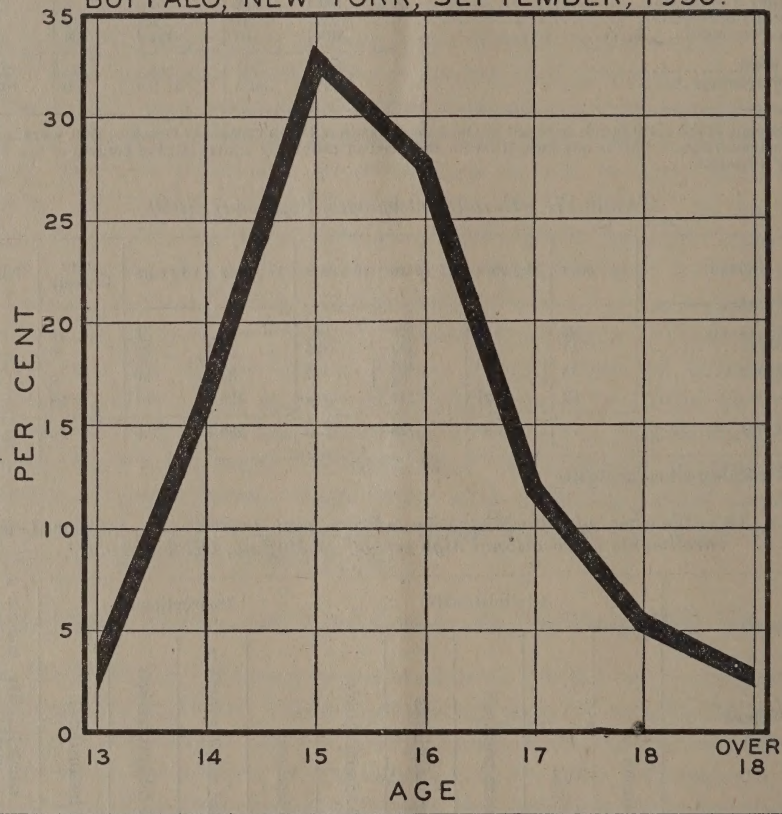
[1] Not grammar-school graduates.

TABLE 18.—*Number of administrative officers and teachers as compared with enrollments in vocational high schools of Buffalo, October, 1930*

| School | Administrative | | | | | Instructional | | | | Total administrative and instructional |
|---|---|---|---|---|---|---|---|---|---|---|
| | Enrollment | Principals | Assistant principals | Department heads | Total administrative | Shop teachers | Related subjects teachers | Social subjects teachers | Total instructional | |
| Burgard Vocational | 726 | 1 | 1 | 3 | 5 | 18 | 13 | 7 | 38 | 43 |
| McKinley Vocational | 414 | 1 | 1 | | 2 | 11 | 8 | 6 | 25 | 27 |
| Peckham Vocational | 517 | 1 | 1 | | 2 | 13 | 8 | 5 | 26 | 28 |
| Seneca Vocational | 773 | 1 | 1 | 2 | 4 | 19 | 14 | 5 | 38 | 42 |
| Total | 2,430 | 4 | 4 | 5 | 12 | 61 | 43 | 23 | 127 | 140 |

Based upon the enrollment for a later date in October, the ratio of pupils to administrative and instructional staff is 17.1.

DISTRIBUTION BY AGE OF 2365 STUDENTS IN THE FOUR VOCATIONAL HIGH SCHOOLS OF BUFFALO, NEW YORK, SEPTEMBER, 1930.




| AGE | NUMBER OF STUDENTS | PER CENT |
|---|---|---|
| 13 | 75 | 3.18 |
| 14 | 393 | 16.62 |
| 15 | 778 | 32.89 |
| 16 | 652 | 27.56 |
| 17 | 280 | 11.84 |
| 18 | 122 | 5.16 |
| OVER-18 | 65 | 2.75 |

TABLE 19.—*Annual salaries of administrative officers and teachers in vocational high schools, 1930–1931*

| Classification of instructional staff | Number of individuals by classifications listed receiving the salaries indicated | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $4,500 | $2,875 | $2,775 | $2,675 | $2,575 | $2,475 | $2,375 | $2,275 | $2,175 | $2,100 | $2,075 | $2,000 | $1,975 | $1,900 |
| Principals | 4 | | | | | | | | | | | | | |
| Assistant principals | | 3 | 1 | | | | | | | | | | | |
| Department heads | | 5 | | | | | | | | | | | | |
| Shop teachers | | 18 | 6 | 9 | 5 | 6 | 3 | 7 | 2 | | 1 | 2 | | 2 |
| Related subjects teachers | | 11 | 2 | 3 | 5 | 5 | 4 | 5 | | 1 | 4 | 1 | 1 | 1 |
| Social subjects teachers | | | 5 | 1 | 1 | 6 | 3 | 2 | 2 | | 1 | 1 | | 1 |
| Total | 4 | 37 | 14 | 13 | 11 | 17 | 10 | 14 | 4 | 1 | 6 | 4 | 1 | 4 |

TABLE 20.—*Administrative and instruction salaries, with enrollments for October, 1930, of vocational high schools, showing per capita cost for these items*

| School | Administrative | | | Instructional | | Total administrative and instructional salaries paid | Per capita cost for items included |
|---|---|---|---|---|---|---|---|
| | Enrollments | Total salaries paid | Per capita cost | Total salaries paid | Per capita cost | | |
| Burgard Vocational High School | 736 | $13,125 | $17.83 | $105,455 | $143.28 | $118,580 | $161.11 |
| McKinley Vocational High School | 414 | 7,375 | 17.81 | 63,800 | 154.10 | 71,175 | 171.91 |
| Peckham Vocational High School | 517 | 7,375 | 14.26 | 67,450 | 130.46 | 74,825 | 144.72 |
| Seneca Vocational High School | 773 | 13,125 | 16.98 | 92,575 | 119.75 | 105,700 | 136.74 |
| Total | 2,440 | 41,000 | 16.80 | 329,280 | 134.95 | 370,280 | 151.75 |

The net cost of administrative and instructional salaries at the annual rate amounts to $370,280. The number of pupils in attendance on October 31, 1930, was 2,440. The net cost of administrative and instructional salaries per pupil-year is therefore $151.75. The appropriation for materials and supplies amounts to $43,000, which plus the salaries for administration and instruction amounts to $413,280. Against this sum are the following credits:

| | |
|---|---|
| State aid (estimated) | $140,000.00 |
| Federal aid (estimated) | 51,818.00 |
| Value of commercial products, materials sold and maintenance work about the schools conservatively estimated at | 45,000.00 |
| Total credits | 236,818.33 |
| Total net cost of administrative and instructional salaries and of materials and supplies | 413,280.00 |
| Total credits | 236,818.33 |
| Cost to the city of Buffalo | 176,461.67 |
| Cost to the city of Buffalo per pupil (enrollment of Oct. 31, 1930) | 72.32 |

It is to be borne in mind that the cost of teachers' salaries per pupil is based on a present enrollment. The salaries of teachers are fixed for the year; the enrollment during the year may increase considerably over that of October 31, with the consequent result of lowering the per pupil cost given above.

There are no available comparable standards for any exact determination of costs in vocational schools. The type of organization and the effectiveness of the program are important factors which can not be neglected in the consideration of costs and which vary considerably with different cities. The sum of $72.32 does not seem to be an excessive amount of money to be expended by the city of Buffalo for its share of the teachers' salaries and for the cost of materials and supplies in the vocational schools.

## Trades Taught, School Staff, Enrollment, and Teacher Load in Day Vocational High Schools

Combining the figures in the following résumés we find that the pupil-teacher load for the four vocational high schools, based on the enrollment of November 10, 1930, was 18.41.

*Burgard Vocational High School—statistics for day school, November 10, 1930*

Trades taught: Printing—hand composition; printing—linotype; printing—job press work; printing—cylinder and automatic press work; lithography; automobile mechanical repair; automobile electrical repair; tire vulcanizing and repair; storage-battery repair; aircraft-engine repair; airplane construction and repair.

School staff: Principal and assistant principal, 2; teachers—shop teachers (including some acting as department heads), 19; related subjects teachers, 13; music and gym teachers, 2; social subjects teachers, 7. Total teachers, 41.

Enrollment by school years: First year, 362; second year, 246; third year, 71; fourth year, 31; State rehabilitation students, 15. Total, 726.

Pupil-teacher load, 17.7.

*McKinley Vocational High School—statistics for day school, November 10, 1930*

Trades taught: Machine-shop practice, pattern making, sheet-metal practice, carpentry, plumbing, plastering, bricklaying, music, cabinet and mill work.

School staff: Principal and assistant principal, 2; teachers—shop teachers, 12; related subjects teachers, 8; social subjects teachers, 5. Total teachers, 25.

Enrollment by school years: First year, 199; second year, 156; third year, 51; fourth year, 8. Total, 414.

Pupil-teacher load, 16.6.

*Peckham Vocational High School—statistics for day school, November 10, 1930*

Trades taught: Baking, upholstering, tailoring, painting and finishing, machine-shop practice, cabinet making, joinery, carpentry, mill work.

School staff: Principal and assistant principal, 2; teachers—shop teachers, 13; related subjects teachers, 10; social subjects teachers, 5. Total teachers, 28.

Enrollment by school years: First year, 313; second year, 141; third year, 53; fourth year, 10. Total, 517.

Pupil-teacher load, 18.5.

*Seneca Vocational High School—statistics for day school, November 10, 1930*

TRADES TAUGHT

Electrical trades: Wiring, shop practice, power plant maintenance, steam electric generation, telephony, electrical refrigeration.

Radio trades: Broadcasting station operation, commercial operation, radio servicing, amplifier service.

Metal trades: Machine-shop practice tool and die making.

Photography.

School staff: Principal and assistant principal, 2; teachers—shop teachers, 19; related subjects teachers, 13; social subjects teachers, 6. Total teachers, 38.

Enrollment by school years: First year, 368; second year, 198; third year, 111; fourth year, 96. Total, 773.

Pupil-teacher load, 20.34.

## Miscellaneous Data

The following three tabulations are of interest as being perhaps typical of the vocational schools, though they are not conclusive.

TABLE 21.—*Amount of high-school work completed by 181 students who had attended high school before enrolling in the Burgard Vocational High School, September, 1930*

BURGARD SCHOOL

| Number of years of high-school training | 1928–29 | | 1929–30 | | 1930–31 | |
|---|---|---|---|---|---|---|
| | Number of pupils | Total years of high-school training | Number of pupils | Total years of high-school training | Number of pupils | Total years of high-school training |
| ½ | 35 | 17.5 | 22 | 11 | 19 | 19.5 |
| 1 | 59 | 59 | 108 | 108 | 128 | 128 |
| 1½ | | | 7 | 10.5 | 1 | 1.5 |
| 2 | 31 | 62 | 18 | 36 | 22 | 44 |
| 2½ | 1 | 2.5 | 2 | 5 | 2 | 5 |
| 3 | 3 | 9 | 2 | 6 | 7 | 21 |
| 3½ | | | 1 | 35 | | |
| 4 | 1 | 4 | 1 | 4 | 2 | 8 |
| Total | 130 | 154 | 161 | 173 | 181 | 217 |
| Average years high school | | 1.2 | | 1.06 | | 1.2 |

In September 1930, 181, or 25 per cent, of the 722 students enrolled in Burgard (a 4-year vocational high school) had on an average 1 year plus of high-school work before coming to a 4-year vocational high school. Both the median and modal number (in addition to the average) are 1 year of high school.

TABLE 22.—*Number of graduates in trade courses from Burgard (Elm) Vocational Day School by years*

| Trade courses | Number of graduates by years | | |
|---|---|---|---|
| | 1927–28 | 1928–29 | 1929–30 |
| Printing, hand composition | 34 | 20 | 8 |
| Printing, presswork | 20 | 20 | 12 |
| Patternmaking | 11 | | |
| Machine-shop practice | 10 | 13 | 13 |
| Automobile, electric repair | 20 | 19 | 37 |
| Automobile, tire repair | 5 | 2 | 4 |
| Automobile, mechanical repair | 41 | 49 | 40 |
| Printing, linotype composition | | | 10 |
| Lithography (printing) | | | 8 |
| Airplane construction and engine repair | | | 20 |
| Total | 141 | 123 | 152 |

As the result of a new building the enrollment in the new Burgard School will greatly increase. This in turn will probably result in an increase in the number of graduates.

TABLE 23.—*Records of graduates of the 2-year course in carpentry and cabinet making of the McKinley Vocational School, 1924–1929*

| Year | Number completing the course | Initial position | | |
|---|---|---|---|---|
| | | Number of students | Kind of work | Average entrance wage per hour |
| 1924 | 3 | 3 | Cabinet | $0.36 |
| 1925 | 15 | 9 | Carpentry | .50 |
| | | 3 | Cabinet | .30 |
| | | 3 | Other than woodwork | |
| 1926 | 13 | 8 | Carpentry | .50 |
| | | 4 | Cabinet | .30 |
| | | 1 | Other than woodwork | |
| 1927 | 10 | 5 | Carpentry | .50 |
| | | 3 | Cabinet | .30 |
| | | 2 | Other than woodwork | |
| 1928 | 10 | 5 | Carpentry | .50 |
| | | 5 | Cabinet | .30 |
| 1929 | 13 | 6 | Carpentry | .45 |
| | | 7 | Cabinet | 30 |

NOTE.—5 of these graduates are now receiving $55 per week as the journeyman's wage in carpentry.

## Some Details on Evening School Enrollments

Peckham Evening School enrolled students from 10 high schools, 32 public schools, and 17 parochial schools for the year 1930–31. Of the evening-school enrollment 59.9 per cent were enrolled for the first time; 18.9 for the second year's work, 9.7 for the third year's work, and 11.5 for more than the third year's work.

Enrollment in Peckman Evening School by years: 1926–27, 349; 1927–28, 579; 1928–29, 450; 1929–30, 547; 1930–31, 540.

Enrollment in Peckham Evening School by courses (October, 1930): Architectural drafting, 54; mechanical drafting, 49; woodwork, 112; upholstering, 42; gymnasium, 31; tailoring, 21; painting and wood finishing, 19; machine-shop practice, 123; baking, 33; music, 35; mathematics, 43. Total, 540.

Of these, 474 are apprentices and 66 are journeymen. Only men working at a trade are permitted to enroll in Peckham Evening School. In October, 1930, 89 who were formerly day-school students enrolled in the evening school.

Enrollment in Burgard Evening School by years: 1926–27, 558; 1927–28, 594; 1928–29, 355; 1929–30, 459.

Burgard Evening School enrollment by subjects for October 27, 1930, is 821; 428 of these were apprentices in trades; 26 were journeymen workmen in different trades; and 127 were in special classes such as meteorology, photographic art, music, etc.

Of the 852 students enrolled on November 21, 1930, in the Burgard Evening Vocational High School in the various courses, 307 or 35.4 per cent had previously taken work in this school. Two hundred and ten of these had enrolled for the second year's work; 85 for the third year, and 14 for the fourth year.

Courses offered in Burgard Evening School include auto repair, storage-battery repair, machine-shop practice, drafting, general

welding, pipe welding, aircraft welding, aircraft-engine repair and construction, printing and lithography. Since the establishment of the Burgard Evening High School, 388 have graduated.

Of the 821 enrolled in the Burgard Evening School for the fall of 1930, 385 have had educational training beyond the elementary school as follows: 127 students, 1 year high school; 128 students, 2 years' high school; 59 students, 3 years' high school; 64 students, 4 years' high school; 7 students have had some college training.

This indicates that the night schools are enrolling a number of pupils with training which will serve as a basis for additional technical work.

The evening-school enrollments in the four vocational high schools on November 10, were as follows: Burgard, 821; McKinley, 584; Peckham, 540; Seneca, 539. Total, 2,484.

TABLE 24.—*Enrollment and amount of money paid for instruction and supervision in evening vocational work for years 1929–30, 1930–31*

| Schools | School year 1929–30 | | School year 1930–31 | |
|---|---|---|---|---|
| | Salaries | Registration | Estimated salaries | Registration, October-November |
| Technical: | | | | |
| Apprenticeship | $5,361.62 | 580 | | |
| Vocational | 296.50 | 42 | | |
| Principal | 456.00 | | | |
| Total | 6,114.12 | 622 | $8,580.00 | 739 |
| Seneca: | | | | |
| Music | 175.50 | 18 | | |
| Apprenticeship | 3,081.50 | 378 | | |
| Vocational | 418.00 | 63 | | |
| Principal | 525.00 | | | |
| Total | 4,200.00 | 459 | 6,140.00 | 539 |
| Peckham: | | | | |
| Music | 184.50 | 38 | | |
| Apprenticeship | 2,703.50 | 259 | | |
| Vocational | 1,765.00 | 247 | | |
| Principal | 481.00 | | | |
| Total | 5,134.00 | 514 | 6,280.00 | 540 |
| McKinley: | | | | |
| Music | 498.50 | 86 | | |
| Apprenticeship | 3,330.00 | 412 | | |
| Vocational | 996.00 | 86 | | |
| Principal | 477.00 | | | |
| Total | 5,301.50 | 584 | 4,790.00 | 584 |
| Burgard (Elm): | | | | |
| Music | 129.50 | 29 | | |
| Apprenticeship | 6,148.00 | 782 | | |
| Vocational | 175.00 | 18 | | |
| Principal | 534.50 | | | |
| Total | 6,987.00 | 829 | 6,100.00 | 821 |
| Supervision | 487.50 | | 450.00 | |
| State aid (estimated) | 6,500.00 | | 7,000.00 | |

Instructional salary only. Cost of janitorial work not included in above.

TABLE 25.—*Cost of buildings, equipment, and sites of vocational high schools*

BURGARD

| | |
|---|---|
| Building—incomplete but actual cost up to date | $1, 006, 667. 04 |
| Equipment—estimated | 500. 000. 00 |
| Site—assessed valuation | 32, 760. 00 |
| Total estimated cost to city | 1, 539, 427. 04 |

Note: This site was donated.

M'KINLEY

| | |
|---|---|
| Building—assessed valuation, $310,000, estimated replacement cost | 500, 000. 00 |
| Equipment—estimated | 175, 000. 00 |
| Site—assessed valuation | 106, 730. 00 |
| Total estimated cost to city | 781, 730. 00 |

NOTE: Buildings and site purchased for $270,000. Cost of remodeling and equipment, $252,059.38.

PECKHAM

| | |
|---|---|
| Building—actual cost | $492, 096. 08 |
| Equipment—actually spent $214,893.16 plus equipment moved and that made in school (estimated) | 250, 000. 00 |
| Site—assessed valuation | 105, 890. 00 |
| Total estimated cost to city | 847, 986. 08 |

NOTE: Site was city property. All benches, shop-tool rooms, drawing tables, etc., were made in the school.

SENECA

| | |
|---|---|
| Building—actual cost | $501, 664. 25 |
| Equipment—actually spent $223,704.50 plus equipment moved (estimated) | 250, 000. 00 |
| Site—assessed valuation | 45, 410. 00 |
| Total estimated cost to city | 797, 074. 25 |

NOTE: Site was city property. About $125,000 worth of electrical equipment was purchased at 40 per cent discount, or $75,000. This represented a saving of about $50,000. Much telephone material was purchased from the Federal Telephone & Manufacturing Co., at the time of its liquidation, at junk prices. About $25,000 worth was purchased for $2,000.

## A General Statement of Conclusions

Buffalo has developed a program in industrial education that puts it in the front rank of those cities which have assumed responsibility for providing on a large scale and in an effective manner training looking toward the preparation for employment of that large body of persons going into the trades and industries. The action of Buffalo in this respect is wise. It is an industrial city. For the United States as a whole the census of 1920 shows that of all persons 10 years of age

and over gainfully employed, 30.8 per cent were in the manufacturing and mechanical industries. For Buffalo the percentage was 45.8, and it is estimated that at the present time this ratio is even higher. The next largest percentage for any occupational group in Buffalo was 13.1 for "clerical occupations," while 13 per cent were engaged in "trade." Vocational-industrial education in Buffalo was built and is maintained upon the sound principle of furnishing specific types of training that will function in a definite way for employment purposes. The general estimate of persons who have observed the Buffalo program and who are qualified to express an opinion as to its character is to the effect that the vocational-industrial program of this city compares favorably with the best to be found in any cities of similar size.

To meet the needs for training which it is practicable and feasible to provide at public expense, Buffalo has established four vocational high schools in accordance with State regulations. Each of these schools specializes in training for certain trades, representing the dominant industries of the city. Admission requirements to the day schools include graduation from the grammar grades. This is a wise provision as it is an important factor in limiting enrollments to those who can be expected to profit by training in skilled and technical lines of work.

Buffalo is rendering a large service to persons employed in the trades and industries of the city through the evening schools conducted by the four vocational high schools. The enrollment in evening classes is limited to apprentices and journeyman workers, and shop courses are provided in accordance with the trade or industry in which they are employed. This insures that the money spent on the evening schools will be for the benefit of those for whom it will have the greatest value.

By means of quite a complete system of special schools and classes, Buffalo also has provided industrial training to meet the needs of special groups. The system of special schools, such as school No. 10, allotting one-third or more of the time of the school program to practical types of industrial work, represents a very commendable effort to serve those groups of pupils who do not meet with reasonable success in their attempts to carry on in the programs of the regular schools. In the continuation school and especially in the opportunity school the city provides a final opportunity for the pupils who have not made good in the regular classes to receive training of a type that will be useful to them in making adjustments to employment situations. With this system of special schools and the provisions made in them for industrial types of work, the trade schools are wisely relieved of the burden of caring for the misfits coming from the regular classrooms. The requirements for admission, therefore, can be made the same as those for the regular high schools without depriving the misfits

and the handicapped children of types of industrial work which they can profitably pursue. This makes it possible for the vocational-industrial schools to offer courses of a character that will best meet the needs for training in skilled and technical lines of work.

Industrial work for general education objectives is provided for in approximately 100 shops maintained in the elementary schools, making available industrial arts to all boys. In most of the schools the shop rooms and equipment provided are reasonably satisfactory. The character of the instruction is good.

Buffalo has done pioneer work in the development of training courses with a trade vocational objective. The progress made has been greatly facilitated by making the official responsible for the industrial program a deputy superintendent of schools. Such an arrangement makes possible the development of friendly and helpful relations with industrial companies and workers; it places a man with an appreciation for industrial education in an advantageous position for obtaining a consideration of the needs of industrial education by those in control of the whole school program; and it encourages industrial and trade organizations to assist in the development of the program.

Industrial education in Buffalo has developed many and wide contacts with the industries of the city. The courses in aviation are an example. Employers and employees in a very effective way give their assistance in the organization of instruction and the securing of equipment. The variety of courses that are successfully carried on is a strong evidence of this fact.

The qualifications of instructors and the character of instruction are generally good. The four vocational schools are well housed. Good equipment is provided in almost all cases.

While the record system for placement and follow-up work is not adequate, information relative to graduates shows that placement work had been carried on fairly satisfactorily and that a reasonable percentage of the graduates are successfully working at the trade for which they were trained.

Some unsatisfactory conditions exist. A better guidance program for directing more of those who eventually will go into the trades and industries, into the vocational high schools is needed. The addition of the two upper years of work in the four vocational schools has resulted in many small classes. The enrollment in the schools should be increased. This would increase the size of the classes which are now small and result in a lower cost for instruction. The number of persons going into trade and industrial work would warrant the enrollment of more pupils in these schools. Seneca School is already full and a large number had to be refused admission at the beginning of school in September, 1930.

## Some Specific Recommendations

It is recommended: (1) That the size of classes be fixed at approximately 20 pupils for shop subjects and 25 for related shop subjects and social science subjects. Approximate enrollments of 20 for shop classes and 25 for related work are accepted by many responsible for vocational programs, as standards consistent with good instruction and economical administration. This recommendation is made with the understanding that situations sometimes arise which make it practically impossible and wholly inadvisable to adhere in all cases to such a standard. However, departure therefrom should be neither common nor wide of the mark. Whether, for example, a school system establishes 18 or 20 as the standard for shop classes, does not matter so much as does the frequent disregard of the accepted standard. If in the future, practice with reference to the organization of classes is made to accord with these regulations, the per pupil cost of teachers' salaries will be materially reduced.

(2) That in transforming the vocational schools into 4-year vocational high schools the responsibility for providing training courses of two years' or less duration to meet the needs for training of a large proportion of the school enrollment shall not be overlooked. Many pupils will not complete the 4-year course. Moreover, there are many trade occupations which do not require four years of trade preparatory training. The establishment of 4-year vocational high schools is to be commended, but interest in the development of 4-year high-school courses must not be permitted to smother the efforts which have been made, and which have been quite successful, to provide 2-year unit-trade courses for the preparation of pupils to enter upon employment in the trades and industries as advanced apprentices. The organization of short-unit courses to meet special needs as they arise in the trades and industries should be encouraged as a part of the function of a trade school.

(3) That the instructional load be more evenly distributed among the teaching staff. Some teachers are carrying comparatively much more of the work of instruction than are others, both as regards the number of classes and the size of classes assigned to them. Equalization of instructional work is a factor in equalizing opportunities for preparation of class plans and for good teaching.

(4) That an effort be made to organize part-time cooperative courses on the half-time basis in the day schools. There is practically no work carried on in this type of training. Experience has shown that the part-time cooperative plan is one of the most effective means for training in specific trades. Moreover, many boys need to earn before they have time to complete a 4-year or even a 2-year all-day trade preparatory course.

It is recognized that in some cities cooperative part-time courses are difficult to organize, as it is difficult to find placement for the younger pupils. Some industries are reluctant to employ boys under 16 or even 18 years of age. However, there are many boys who sever their connection with the all-day school and go to work before they are 16 years old. Some instruction suitable to apprentices should be provided in day courses. An effort should be made to establish some of the work in the upper years of the 4-year vocational high school on a part-time employment basis.

(5) That enrollments, through an adequate system of guidance, be increased so as to include a larger percentage of the pupils of Buffalo who can be served best by the 4-year vocational schools. Under the permissive regulations of the State department of education the four vocational (trade) schools are now classed as 4-year vocational high schools and are organized to function accordingly. Four separate vocational high schools, each with its principal, assistant principal, instructional staff, equipment, and housing facilities, should carry a larger proportion of the pupils enrolled in the secondary school. It is to be remembered that these schools admit no one who has not completed the elementary school.

(6) That a coordinated plan of organization, a program of activities, and an adequate system of records which will function under the deputy superintendent of schools in charge of vocational education be perfected. The program of activities should include individual counseling by qualified teachers and also a school course in occupations. Vocational counseling as a special type of activity should be made available to all students beginning with the seventh grade. A junior high school organization would facilitate such a program. The work now done in vocational guidance is inadequate for meeting the need of the schools. With a better plan for vocational guidance more of the pupils who later go to the vocational high schools will enter these schools immediately after the completion of the elementary schools. This will represent the saving of quite a large amount of money due to repeating the first year of high school. Moreover, with proper guidance more pupils for whom the 4-year vocational high schools probably offer the best type of training will enter these schools.

(7) That the work of the employment bureau, the placement service of the New York State Employment Bureau, the continuation school, and the bureau of child hygiene, which issues the health certificates, be better articulated and integrated for the purpose of serving the continuation-school pupils. The persons engaged in these activities should be housed in the same building or at least so conveniently located as to make exchange of records, information, and consultation, easy. Especially is there need for coordination in

the issuance of work certificates and in the enrollment in the continuation school.

(8) That better educational provisions be made for those young people who have severed their connections with the regular full-time day school and entered upon remunerative work. The housing facilities and the auxiliary facilities, such as libraries, reading rooms, etc., for the continuation classes are inadequate, especially for the boys. Some of the classes are held in a building which at one time was condemned for school purposes and which is an actual hazard to life.

The curriculum needs to be enriched and additional provisions made for a program of instruction that will better meet the needs of the continuation pupils. It may be said that the teachers are doing what they can for these pupils with the facilities provided.

(9) That it be made certain that the same courses, or similar instruction which has in reality the same objective and in which boys may be qualified for employment in similar positions, are not offered in both the technical high school and any vocational high school. The enrollments in these institutions will not warrant the duplication of courses in any of the institutions. Carpentry, architectural drafting, and similar subjects are included in the course of instruction at the Technical High School. An examination of the specific nature of the work would have to determine the objective which it serves. It is to be remembered that the 4-year vocational high schools are organized to give trade and technical subjects. The objective to be served by the Technical High School, on the one hand, and the vocational high school, on the other, should be kept separate and distinct. This would not be such an important matter if enrollments in these schools were sufficiently high to warrant the formation of additional classes.

(10) That the Burgard Vocational High School be equipped in keeping with the building which has been provided and the educational objectives which it has been planned to meet. Additional equipment should be provided for the course in steam-electric generation at the Seneca School.

(11) That provisions be made for assigning some of the work of a more or less clerical and ordinary character now performed by assistant principals and teachers in vocation schools to clerks and office assistants. All teachers should be able to devote their full time to the instructional program of the school. This would include preparation of material and of shop equipment for instruction. In trade schools it is important that individuals qualified to do so make necessary contacts with industries for both placement work and the development of courses of instruction. In some of the smaller trade schools an assistant principal and in other schools heads of departments, when

they do no teaching, can hardly be justified on the basis of the need of their services in administrative and supervision work. They can be justified, however, if they devote considerable time to placement work, the development of instructional material for the school, and to making and maintaining proper contacts with industries and industrial organizations.

(12) That decidedly better housing conditions be provided for the Opportunity School and that its equipment and the general facilities for instruction be improved. The service which this school renders to the type of boy it enrolls, with the consequent result to society, amply justifies this recommendation.

U. S. GOVERNMENT PRINTING OFFICE: 1931

For sale by the Superintendent of Documents, Washington, D. C. - - - Price 10 cents